1 Block Reference

Overview and Conventions

DSPower blocks have been subdivided into the following categories based on their functions.

Within each category, functions are listed alphabetically. Note that with the online Help version of documentation, you can use the Browse buttons (">>" and "<<") to move forward and backwards between different function descriptions.

The following convention is used in the following sections for block reference.

Text Parameters:

The convention used for text parameters is very simple. The required entry is formatted as bold. The optional parameters are enclosed in square brackets. A special case arises when analog channel inputs are being referred to. The convention used is "**an**" where n represents a number.

For example: *[path]**filename**[ext]* would mean that the filename entry is required, but the path and extension are optional. In the case of analog channels, a0 would be channel 0, a1 would be channel 1, etc.

Numerical Parameters

The convention used for Numerical Parameters is similar. If the entry required is a number, then this field contains "n" followed by the required units for the parameter. This is followed by the possible range. Any special details are mentioned later enclosed in-between /* and */. A typical entry would look like this:

n *<units>; <range allowed>;* /* special cases */

For example: ***n*** *sec; >0*; /* 0 = All */

Block Categories

Code Blocks

Control Blocks

Display Blocks

Filter Blocks

Function Blocks

Instrument Blocks

Monitor/Debug Blocks

Utility Blocks

Block Alphabetic List and Cross Reference

The table below provides a cross-reference for all DSPower-Block Diagram blocks to their corresponding Reference Guide descriptions, which provide input, parameter, and output information and user instructions. Each Reference Guide description also contains a "Related Users Guide Topic" section which lists related areas in the Signalogic DSP Software Users Guide. Users Guide information typically is more general in nature, including more extensive source code examples and explanation of relationship with other blocks and software components.

Function Name	Page
2-D Spec (Contour)	1
3-D Spec (Waterfall)	12

Add2 78
A/D Input 97
Bode Plot 17
Convolution 54
Correlation 55
Delay 58
Difference Equations 60
Digital Oscilloscope 19
FIR Bandpass Filter Design 34
FIR Bandstop Filter Design 37
FIR Highpass Filter Design 39
FIR Lowpass Filter Design 41
FFT Generation 60
Frequency Zoom 63
Fs Decimation (Divide) 65
Fs Interpolation (Mult) 66
For Loop 5
Group Delay Display 21
iFFT 67
IIR Bandpass Filter Design 43
IIR Bandstop Filter Design 46
IIR Highpass Filter Design 48
IIR Lowpass Filter Design 50
Magnitude Display 22
Phase Display 25
Pole-Zero Display 26
Sampling Rate Conversion 75
Transfer Function Generation
Waterfall Display
Waveform Display/Edit 32
While Loop 8

1.1 Code Blocks

Description Text.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2
Parameters		

Comments

Comments go here.

Example

Below is an example of an entry in the Code Block block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_code
Label	Code Block
Data Types	DSP | XY | IMG | MAI
Block Types	CODE
Attributes	0
Defines	
Symbol Filename	code
Help Filename	refguide
Graphical Control Interface Filenames	
Code Files	
Function Files	

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

1.2 Control Blocks

Control constructs available in the DSPower system library are listed below. For a complete listing of blocks in alphabetical order, see Block Alphabetic Listing and Cross-Reference, above.

Control Blocks

For Loop

Description Text.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1

Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2
Parameters		

Comments

Comments go here.

Example

Below is an example of an entry in the For Loop block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_forlp
Label	For Loop
Data Types	DSP | XY | IMG | MAT, 0
Block Types	CTRL
Attributes	LOOP

Defines	
Symbol Filename	for
Help Filename	refguide
Graphical Control Interface Filenames	
Code Files	
Function Files	

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

If Then

Description Text.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2
Parameters		

Comments

Comments go here.

Example

Below is an example of an entry in the If Then block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_ifthen
Label	If Then
Data Types	DSP | XY | IMG | MAT
Block Types	CTRL
Attributes	0
Defines	
Symbol Filename	ifthen
Help Filename	refguide
Graphical Control Interface Filenames	
Code Files	
Function Files	

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

While Loop

Description Text.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1

Output 2	[path]**filename**[ext]	waveform output from trace 2

Parameters

Comments

Comments go here.

Example

Below is an example of an entry in the While Loop block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_while
Label	While Loop
Data Types	DSP | XY | IMG | MAT
Block Types	CTRL
Attributes	LOOP
Defines	
Symbol Filename	while
Help Filename	refguide
Graphical Control Interface Filenames	

Code Files	
Function Files	

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

.

1.3 Display Blocks

Display functions available in the DSPower system library are listed below. For a complete listing of blocks in alphabetical order, see Block Alphabetic Listing and Cross-Reference, above.

Display Blocks

2-D Spectrograph (Contour)

In a 2-D Spectrogram display, multiple FFT frames are displayed at once, with frequency along the vertical axis, time along the horizontal, and linear or log amplitude encoded either with different colors or gray shades. In this format, you are "looking down" at the frequency domain data - for this reason this display is referred to as a "contour plot."

The 2-D Spectrogram allows single- or dual-trace display of one or two waveforms. In the case of a single waveform, the data can be two-channel. Controls include "current active trace" selection, amount of data shown, vertical amplitude limits (which effectively control the amount of quantized amplitude in linear mode or the amount of quantized dB in log mode that is assigned to each color or gray shade), zoom (and zoom-out), pan, random-access, target window measurement and readout, units, color and background, and surface topology.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1.
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Parameters		

Max. Dynamic Range	**n** dB	specifies the maximum dynamic range, in dB,
Time Spanned	**n** sec; >=0, 0=All	specifies amount of data to be shown in each segment, in seconds; a zero value causes the entire amount of the largest waveform to be displayed
Color Scheme	**C1/C2/G1/G2**	specifies the color scheme to be used for the display. C1 & C2 = color encoding schemes, G1 = Gray level, G2 =

Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2

Comments

If no waveform is specified in the Input 2 field, then dual-trace display is disabled, and the waveform in the Input 1 field is displayed in a single-trace display.

If no filename extension is specified for input waveforms, a .frq extension is assumed.

If Output waveforms are not specified and interactive editing changes are made to the displayed waveform, the input file is overwritten with the changes. In all cases of waveform editing, a .bak waveform file is created, and in interactive mode, prompts are displayed before changes are saved.

Example

Below is an example of an entry in the 2-D Spec Display block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Max. Dynamic Range	60
Time Spanned	0.0
Color Scheme	C2

See Also

3-D Spec (Waterfall)

Bode Plot

Magnitude Display

Phase Display

Power Spectra Display

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.1.4 Display Settings

section 5.4 Interactive Operation

Registration Information

Template Filename	t_2dspec
Label	2-D Spectrograph (Contour)
Data Type	DSP
Block Type	DISP
Attributes	DISP | MAGDSP | FRQAXIS | ZAXIS | DAOUT
Defines	SPEC2D
Symbol Filename	spec2D
Help Filename	refguide
Graphical Control Interface Filename	i_file, i_wvfrm, i_xaxis, i_yaxis, i_colors, i_dsphlp
Code Files	c_bdisp, c_adisp
Function Files	2dspec

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

3-D Spectrogram (Waterfall)

This display is sometimes referred to as a "landscape" or "spectrogram." In a 3-D Spectrogram display, multiple FFT output frames are displayed at once, with frequency along the horizontal axis, amplitude along the vertical and time depicted as an "apparent," or z-axis going into the screen. Each successive FFT output frame is displayed behind the previous and hidden-line removal may be enabled, giving the overall appearance of a three-dimensional display.

For this reason, the 3-D Spectrogram display is often referred to as a form of "waterfall display".

The 3-D Spectrogram allows single- or dual-trace display of one or two waveforms. In the case of a single waveform, the data can be two-channel. Controls include amount of data shown, log or linear amplitude or amplitude-squared display, vertical amplitude limits, zoom (and zoom-out), pan, random-access, target window measurement and readout, units, color and background, grid, angle of apparent incline (ranging from 5° to 90°) and hidden-line removal and surface mesh options. Also, the frequency axis can be specified to be linear or log. In the log mode, the log base, number of cycles to display, and minimum frequency axis value can be selected

Inputs	**Entry**	**Description**
Input 1	[path]**filename**[ext]	waveform to display on trace 1.
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Parameters		
Display Format	**Log / Lin**	specifies log10 or linear magnitude display
Time Spanned	**n** sec; >=0, 0=All	specifies amount of data to be shown in each segment, in seconds; a zero value causes the entire amount of the largest waveform to be displayed
Apparent Angle	**n** degrees; 5..90	specifies angle of apparent incline of z-dimension (time axis)
Surface	**H / M / N**	specifies hidden line removal option: H = hidden lines removed, M = hidden lines removed and with surface mesh, N = none
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2

Comments

If no waveform is specified in the Input 2 field, then dual-trace display is disabled, and the waveform in the Input 1 field is displayed in a single-trace display.

If no filename extension is specified for input waveforms, a .frq extension is assumed.

If Output waveforms are not specified and interactive editing changes are made to the displayed waveform, the input file is overwritten with the changes. In all cases of waveform editing, a .bak waveform file is created, and in interactive mode, prompts are displayed before changes are saved.

Example

Below is an example of an entry in the 3-D Spec Display block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Display format	Log
Time Spanned	0.0
Apparent Angle	45
Surface	H

Entry Notes

1) In the Input fields, if no path information is entered, the value currently specified in the Waveform Files entry in the Directory Configuration dialog box is used. If no filename extension information is entered; a default extension of .frq is assumed.

2) If only Input 1 is entered, then multitrace display is disabled.

3) Output waveform filenames are created only if not blank, and different from their Input waveform filename counterparts. Otherwise, output waveforms are assumed to be identical to input waveforms.

4) If interactive editing is performed on displayed waveforms, the original waveform files are saved with .bak extensions. Upon closing the display block, a prompt is displayed before waveform editing changes are saved.

See Also

2-D Spec (Contour)

Magnitude Display

Phase Display

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_3dspec
Label	3-D Spectrogram (Waterfall)
Data Type	DSP
Block Type	DISP
Attributes	DISP | MAGDSP | FRQAXIS | ZAXIS
Defines	SPEC3D
Symbol Filename	spec3D
Help Filename	refguide
Graphical Control Interface Filename	i_file, i_wvfrm, i_xaxis, i_yaxis, i_colors, i_dsphlp
Code Files	c_bdisp, c_adisp
Function Files	f_3dspec

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

.WAV File Display

To use .WAV files as input to DSPower, a .WAV extension MUST be indicated in the input fields in the data-entry menus. All time domain functions are active with .WAV files as input, EXCEPT for waveform editing with 8-bit .WAV files. Only 16-bit .WAV files are allowed in waveform editing.

There are limitations to the de facto standard .WAV format found in use with most multimedia programs. One of these is the lack of maximum amplitude value, which causes .WAV files to be displayed and processed in Hypersignal as if they contained full-scale values. Another is lack of frequency or wavelet domain information. These are severe limitations, and it is strongly recommended that you convert your .WAV files into Hypersignal .TIM form using File Acquisition, Difference Equations, or time domain waveform editing, as soon as possible before performing serious signal processing work. With that said, it is still worth noting that .WAV file input has been tested with

many Hypersignal functions, such as sampling rate conversion, frequency zoom, and minimum phase calculation, using the .WAV files as direct input (and with Hypersignal .TIM, .FRQ, and .PHZ files as typical output).

Inputs	Entry	Description
Input 1	[path]**filename.wav**	waveform to display on trace 1
Input 2	[path]**filename.wav**	waveform to display on trace 2
Parameters		
Framesize	**n** samples, >=0, 0=All	specifies the framesize needed for display
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2

Comments

If no waveform is specified in the Input 2 field, then dual-trace display is disabled, and the waveform in the Input 1 field is displayed in a single-trace display.

A filename extension is necessary. If no filename extension is specified for input waveforms, a .tim extension is assumed.

If Output waveforms are not specified and interactive editing changes are made to the displayed waveform, the input file is overwritten with the changes. In all cases of waveform editing, a .bak waveform file is created, and in interactive mode, prompts are displayed before changes are saved.

Example

Below is an example of an entry in the .WAV File Display block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Framesize	0

See Also

Waveform Display/Edit

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.1.4 Display Settings

section 5.4 Interactive Operation

Registration Information

Template Filename	t_
Label	.WAV File Display
Data Type	DSP
Block Type	DISP
Attributes	DISP
Defines	
Symbol Filename	disped
Help Filename	refguide
Graphical Control Interface Filename	
Code Files	
Function Files	

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Bode Plot

Online documentation for this section is unavailable in this version. Please consult DSP Engine documentation for further information.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2
Parameters		

Comments

Comments go here.

Example

Below is an example of an entry in the Bode Plot block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_bode
Label	Bode Plot
Data Types	DSP
Block Types	DISP
Attributes	DISP | MULDISP | PHZDSP | MAGDSP | FRQAXIS | FRQZOOM | FRQPAN
Defines	BODEDISP
Symbol Filename	phzdisp
Help Filename	refguide
Graphical Control Interface Filenames	i_file, i_wvfrm, i_xaxis, i_yaxis, i_dspopt, i_dsphlp
Code Files	c_bdisp, c_adisp
Function Files	f_magdsp, f_phzdsp

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Digital Oscilloscope

The Digital Oscilloscope can display single-, dual, or overlaid-trace time domain input from previously stored waveform files or any of the currently active analog channel inputs. Various combinations are possible, including viewing that same analog channel with different filtering options. Operation from the DSP chip point of view is always in real-time up to the maximum sampling rate, but the rate of update of display frames to the video system of the host computer depends on the speed of the host I/O bus and video system. The maximum sampling rate possible depends on the DSP/Acquisition board and DSP chip in use.

FIR and IIR created using the Filter design methods supplied or supplied from outside can be "snapped-in" to each trace independently and applied to analog input data in real-time. Maximum filter sizes and real-time operation with filters are dependent on the sampling rate and DSP/Acquisition board in use.

Controls include timebase, trigger level, trace, and mode, vertical scaling, position and units.

Inputs	Entry	Description
Input 1	[path]**filename**[ext], **an**	waveform/analog input channel to display on trace 1.
Input 2	[path]**filename**[ext], **an**	waveform/analog input channel to display on trace 2
Parameters		
Wrapped / Unwrapped	**U / W**	specifies required sampling frequency
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2

Comments

If no waveform/analog input channel is specified in the Input 2 field, then dual-trace display is disabled, and the waveform in the Input 1 field is displayed in a single-trace display.

If no filename extension is specified for input waveforms, a .tim extension is assumed.

If Output waveforms are not specified and interactive editing changes are made to the displayed waveform, the input file is overwritten with the changes. In all cases of waveform editing, a .bak waveform file is created, and in interactive mode, prompts are displayed before changes are saved.

Example

Below is an example of an entry in the Digital Oscilloscope block:

Input 1	a0
Input 2	a1
Output 1	
Output 2	
Sampling Frequency	15000

See Also

Digital Tape Recorder

Octave Band Analyzer

Spectrum Analyzer

Stimulus and Response

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.1.4 Display Settings

section 5.4 Interactive Operation

Registration Information

Template Filename	t_dscope
Label	Digital Oscilloscope
Data Type	DSP
Block Type	INST | DISP
Attributes	DISP
Defines	DSCOPE

Symbol Filename	dscope
Help Filename	refguide
Graphical Control Interface Filename	i_dscope
Code Files	c_ainst
Function Files	f_dscope

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Group Delay Display

Online documentation for this section is unavailable in this version. Please consult DSP Engine documentation for further information.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2
Parameters		

Comments

Comments go here.

Example

Below is an example of an entry in the Group Delay Display block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Parameter 1	Log

Parameter 2 0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_gddsp
Label	Group Delay Display
Data Types	DSP
Block Types	DISP
Attributes	DISP | PHZDSP | FRQAXIS | FRQZOOM | FRQPAN
Defines	
Symbol Filename	phzdisp
Help Filename	refguide
Graphical Control Interface Filenames	i_file, i_wvfrm, i_axis, i_yaxis, i_dspopt, i_dsphlp
Code Files	c_bdisp, c_adisp
Function Files	f_phzdsp

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Magnitude Display

This function allows frame-by-frame display and inspection of frequency domain magnitude data. It allows single-, dual-, or overlaid-trace display of one or two frequency domain waveforms.

Controls include log or linear amplitude or amplitude squared display, "current active trace" selection, zoom (and zoom-out), pan, vertical amplitude limits, amplitude scaling, random-access, target window, crosshair cursor measurement and readout, units, grid, selection of vertical axis units, scaling factor, and maximum value.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1.
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Parameters		
Maximum dB Displayed	**n** dB	specifies the maximum dB value to be displayed,
Minimum dB Displayed	**n** dB	specifies the minimum dB value to be displayed
0 dB Reference	**A/S/C/W**	specifies the 0 dB point for log amplitude displays A = autoscale, S = System reference, C = system ref value offset by the current Spectrum Analyzer calibration, W = uses the system ref value offset plus a stored waveform header calibration offset
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2

Comments

If no waveform is specified in the Input 2 field, then dual-trace display is disabled, and the waveform in the Input 1 field is displayed in a single-trace display.

If no filename extension is specified for input waveforms, a .frq extension is assumed.

If Output waveforms are not specified and interactive editing changes are made to the displayed waveform, the input file is overwritten with the changes. In all cases of waveform editing, a .bak waveform file is created, and in interactive mode, prompts are displayed before changes are saved.

Example

Below is an example of an entry in the Magnitude Display block:

Input 1	speech
Input 2	
Output 1	

Output 2	
Max. dB Displayed	0
Min dB Displayed	0
0 dB Reference	A

See Also

2-D Spec (Contour)

3-D Spec (Waterfall)

Bode Plot

Phase Display

Power Spectra Display

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.1.4 Display Settings

section 5.4 Interactive Operation

Registration Information

Template Filename	t_magdsp
Label	Magnitude Display
Data Type	DSP
Block Type	DISP
Attributes	DISP | MAGDSP | FRQAXIS | FRQZOOM | FRQPAN
Defines	
Symbol Filename	magdisp
Help Filename	refguide
Graphical Control Interface Filename	i_file, i_wvfrm, i_xaxis, i_yaxis, i_dspopt, i_dsphlp
Code Files	c_bdisp, c_adisp
Function Files	f_magdsp

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Phase Display

This function allows frame-by-frame display and inspection of frequency domain phase data. It allows single-, dual-, or overlaid-trace display of one or two frequency domain waveforms.

Controls include wrapped phase, unwrapped phase, or group delay display format, "current active trace" selection, zoom (and zoom-out), pan, vertical amplitude limits, amplitude scaling, random-access, target window and crosshair cursor measurement and readout, units, grid, and selection of group delay smoothing factor.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1.
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Parameters		
Wrapped / Unwrapped	**U / W**	specifies phase display format. U = Unwrapped, W = Wrapped
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2

Comments

If no waveform is specified in the Input 2 field, then dual-trace display is disabled, and the waveform in the Input 1 field is displayed in a single-trace display.

If no filename extension is specified for input waveforms, a .phz extension is assumed.

If Output waveforms are not specified and interactive editing changes are made to the displayed waveform, the input file is overwritten with the changes. In all cases of waveform editing, a .bak waveform file is created, and in interactive mode, prompts are displayed before changes are saved.

Example

Below is an example of an entry in the Phase Display block:

Input 1 speech

Input 2	
Output 1	
Output 2	
Wrapped / Unwrapped	U

See Also

Bode Plot

Group Delay Display

Magnitude Display

Pole-Zero Display

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.1.4 Display Settings

section 5.4 Interactive Operation

Registration Information

Template Filename	t_phzdsp
Label	Phase Display
Data Type	DSP
Block Type	DISP
Attributes	DISP | PHZDSP | FRQAXIS | FRQZOOM | FRQPAN
Defines	
Symbol Filename	phzdisp
Help Filename	refguide
Graphical Control Interface Filename	i_file, i_wvfrm, i_axis, i_yaxis, i_dspopt, i_dsphlp
Code Files	c_bdisp, c_adisp
Function Files	f_phzdsp

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Pole-Zero Display

Pole-zero display allows S-plane and Z-plane of IIR filter transfer functions. Input comes from IIR filter coefficient files, which contain

Z-domain poles and zeros; an inverse bilinear transformation is performed to map the filter coefficient file values onto the S-plane.

Inputs	Entry	Description
Input	[path]**filename**[ext]	input IIR filter coefficient file
Outputs		
Output	[path]**filename**[ext]	output waveform

Comments

If no filename extension is specified for input waveforms, a .iir extension is assumed.

If Output waveforms are not specified and interactive editing changes are made to the displayed waveform, the input file is overwritten with the changes. In all cases of waveform editing, a .bak waveform file is created, and in interactive mode, prompts are displayed before changes are saved.

Example

Below is an example of an entry in the Pole-Zero Display block:

```
Input    bessel
Output
```

See Also

IIR Bandpass Filter Design

IIR Bandstop Filter Design

IIR Highpass Filter Design

IIR Lowpass Filter Design

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.1.4 Display Settings

section 5.4 Interactive Operation

Registration Information

Template Filename	t_pzplot
Label	Pole-Zero Display
Data Type	DSP

Block Type	DISP
Attributes	DISP | IIR
Defines	
Symbol Filename	pzplot
Help Filename	refguide
Graphical Control Interface Filename	i_file, i_dsphlp
Code Files	c_bdisp, c_adisp
Function Files	f_pzplot

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Power Spectra Display

This function allows frame-by-frame display and inspection of generated Power Spectra data. It allows single-, dual-, or overlaid-trace display of one or two waveforms.

Controls include log or linear amplitude or amplitude squared display, "current active trace" selection, zoom (and zoom-out), pan, vertical amplitude limits, amplitude scaling, random-access, target window, crosshair cursor measurement and readout, units, grid, selection of vertical axis units, scaling factor, and maximum value.

This function allows frame-by-frame display and inspection of frequency domain phase data. It allows single-, dual-, or overlaid-trace display of one or two frequency domain waveforms.

Controls include wrapped phase, unwrapped phase, or group delay display format, "current active trace" selection, zoom (and zoom-out), pan, vertical amplitude limits, amplitude scaling, random-access, target window and crosshair cursor measurement and readout, units, grid, and selection of group delay smoothing factor.

Inputs	**Entry**	**Description**
Input 1	[path]**filename**[ext]	waveform to display on trace 1.
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Parameters		
Maximum dB Displayed	**n** dB	specifies the maximum dB value to be used for display
Minimum dB Displayed	**n** dB	specifies the minimum dB value to be used for display

0 dB reference	**A/S/C/W**	specifies the 0 dB point for log amplitude displays A = autoscale, S = System reference, C = system reference value offset by the current Spectrum Analyzer calibration, W = uses the system ref value offset plus a stored waveform header calibration offset

Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2

Comments

If no waveform is specified in the Input 2 field, then dual-trace display is disabled, and the waveform in the Input 1 field is displayed in a single-trace display.

If no filename extension is specified for input waveforms, a .pwr extension is assumed.

If Output waveforms are not specified and interactive editing changes are made to the displayed waveform, the input file is overwritten with the changes. In all cases of waveform editing, a .bak waveform file is created, and in interactive mode, prompts are displayed before changes are saved.

Example

Below is an example of an entry in the Power Spectra Display block.

Input 1	speech
Input 2	
Output 1	
Output 2	
Maximum dB Displayed	0
Minimum dB Displayed	0
0 dB Reference	A

See Also

Bode Plot

Magnitude Display

Phase Display

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.1.4 Display Settings

section 5.4 Interactive Operation

Registration Information

Template Filename	t_pwrdsp
Label	Power Spectra Display
Data Type	DSP
Block Type	DISP
Attributes	DISP | PWRDSP | FRQAXIS | FRQZOOM | FRQPAN
Defines	
Symbol Filename	magdisp
Help Filename	refguide
Graphical Control Interface Filename	i_file, i_wvfrm, i_xaxis, i_yaxis, i_dspopt, i_dsphlp
Code Files	c_bdisp, c_adisp
Function Files	f_MagDsp

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Spectrum Analyzer

See Spectrum Analyzer in section 1.6, Instrument Blocks.

Wave Display

Description Text.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		

Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2

Parameters

Comments

Comments go here.

Example

Below is an example of an entry in the Wave Display block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_wavdsp
Label	Wave Display
Data Types	DSP
Block Types	DISP
Attributes	DISP | TIMDSP | EDIT | GENEXT | TIMPAN | DAOUT
Defines	
Symbol Filename	disped
Help Filename	refguide

Graphical Control Interface Filenames	i_file2, i_edit, i_wvfrm, i_xaxis, i_yaxis, i_dspopt, i_dsphlp
Code Files	c_bdisp, c_adisp
Function Files	f_wde

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Waveform Display/Edit

Waveform Display/Edit function is a general function that allows single-, dual-, or overlaid-trace display and editing of one or two waveforms. In the case of a single waveform, the data can be two-channel or complex. Also, waveforms other than time domain data can be displayed and edited. Both cut-and-paste and free-form "rubber-band" editing modes are available. These modes can be freely switched between in editing sessions, and are fully enabled at all levels of zoom. Cut-and-Paste operations include delete, copy, insert, and overwrite. Display controls include "current active trace" selection, framesize, zoom (and zoom-out), pan, amplitude scaling, random-access, target window and crosshair cursor measurement and readout, units, color and background, grid, and selection of vertical axis units, scaling factor, and maximum value.

Additionally, segments of displayed waveforms can be written to file or sent to the D/A output of the currently selected DSP/Acquisition hardware. A built-in print function is also available that allows screen dumps or publication quality EMS memory regenerations to nearly 200 different printers.

Inputs	**Entry**	**Description**
Input 1	[path]**filename**[ext]	waveform to display on trace 1.
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Parameters		
Framesize	**n** samples, >=0, 0=All	specifies the framesize needed for display
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2

Comments

If no waveform is specified in the Input 2 field, then dual-trace display is disabled, and the waveform in the Input 1 field is displayed in a single-trace display.

If no filename extension is specified for input waveforms, a .tim extension is assumed.

If Output waveforms are not specified and interactive editing changes are made to the displayed waveform, the input file is overwritten with the changes. In all cases of waveform editing, a .bak waveform file is created, and in interactive mode, prompts are displayed before changes are saved.

Example

Below is an example of an entry in the Waveform Display block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Framesize	0

See Also

.WAV Fle Display

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.1.4 Display Settings

section 5.4 Interactive Operation

Registration Information

Template Filename	t_wde
Label	Waveform Display / Edit
Data Type	DSP
Block Type	DISP
Attributes	DISP | TIMDSP | EDIT | GENEXT | TIMPAN | DAOUT
Defines	
Symbol Filename	disped
Help Filename	refguide

Graphical Control Interface Filename	i_file2, i_edit, i_wvfrm, i_xaxis, i_yaxis, i_dspopt, i_dsphlp
Code Files	c_bdisp, c_adisp
Function Files	f_wde

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

1.4 Filter Blocks

Filter Design functions available in the DSPower system library are listed below. For a complete listing of blocks in alphabetical order, see Block Alphabetic Listing and Cross-Reference, above.

Filter Blocks

Convolution

See Convolution in section 1.5.1, Signal Processing Blocks.

FIR Bandpass Filter Design

This block allows construction of FIR Bandpass filters using the Kaiser Window and Parks-McClellan design methods.

Arbitrary designs, such as multiband and irregular or log frequency passbands, can be specified and realized using the Parks-McClellan method. Filter name, sampling frequency, bandwidth, transition bandwidths, stopband attenuation, and passband ripple are selectable parameters. Filter length is estimated by the software, but may be controlled explicitly. All designs are first displayed and can be measured in a graphical filter display prior to design. Arbitrary designs can be further edited directly using the mouse. Resulting frequency responses can be compared in the graphical display to original specifications and "tolerance regions".

The software creates a time domain impulse response waveform as output. Also, the software creates both an ASCII "filter coefficient file"

and an ASCII "design goal file", which contains the filter specifications and arbitrary filter design, if any. Current maximum filter sizes are 4096 for Kaiser Window design and 768 for Parks-McClellan design.

Filter designs are always displayed graphically prior to actual construction. Several measurement functions are available, which apply to both classical and arbitrary designs. Several editing functions are also available, which apply only to arbitrary designs Measurement functions include target window and crosshair measurement and readout, grid, log/linear frequency and amplitude axes, overlay of actual and desired frequency responses, vertical scaling, and tolerance region display toggle. Editing functions include cut-and-paste and free-form rubberband modes, control over frequency point-density and "defined" and "undefined" regions, and initialization of response from specifications or "design goal files"

Inputs	Entry	Description
Input Design File	[path]**filename**[ext]	filter design goal file
Parameters		
Design Method	**KW/PM**	specifies the design method to be used. KW = Kaiser Window, PM = Parks-McClellan
Sampling Frequency	**n** Hz; >0	specifies sampling frequency in Hz
Center Frequency	**n** Hz, >0	Specifies the center frequency
Bandwidth	**n** Hz, >0	specifies the bandwidth required in Hz
Left Transition Band	**n** Hz, >0	specifies the left transition band in Hz
Right Transition Band	**n** Hz, >0	specifies the right transition band in Hz
Stopband Attenuation	**n** dB, 1..100	specifies stopband attenuation in dB
Maximum Ripple	**n** dB	specifies maximum passband ripple in dB
Outputs		
Output Filter Coefficient File	[path]**filename**[ext]	output filter coefficient file

Comments

The minimum of the transition bandwidth fields is used to determine the filter order or length. Since classical designs always produce

symmetrical filters, the minimum transition bandwidth will control both transition bandwidths. Arbitrary designs can be used to achieve asymmetrical transition bandwidths.

If no extension is specified for the Input filter design filename, a .ffd extension is assumed. The output filter coefficient filename has a default extension of .fir.

Example

Below is an example of an entry in the FIR Bandpass Filter Design block:

Input Design File	parksm
Design Method	PM
Sampling Frequency	48000
Center Frequency	12000
Bandwidth	4000
Left Transition band	500
Right Transition Band	500
Stopband Attenuation	40
Maximum Ripple	1
Output	

See Also

FIR Bandstop Filter Design

FIR Highpass Filter Design

FIR Lowpass Filter Design

IIR Bandpass Filter Design

IIR Bandstop Filter Design

IIR Highpass Filter Design

IIR Lowpass Filter Design

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.1.4 Display Settings

section 5.4 Interactive Operation

Registration Information

Template Filename	t_firbp

Label	FIR Bandpass Filter Design
Data Type	DSP
Block Type	FILT
Attributes	DISP | FIR
Defines	
Symbol Filename	bandpass
Help Filename	refguide
Graphical Control Interface Filename	i_filtfb, i_filt
Code Files	c_bfilt, c_afilt
Function Files	f_filter, f_fft

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

FIR Bandstop Filter Design

This block allows construction of FIR Highpass filters using the Kaiser Window and Parks-McClellan design methods. See FIR Bandpass Filter Design for more information about FIR Filter design capabilities of the software.

Inputs	Entry	Description
Input Design File	[path]**filename**[ext]	filter design goal file
Parameters		
Design Method	**KW/PM**	specifies the design method to be used. KW = Kaiser Window, PM = Parks-McClellan
Sampling Frequency	**n** Hz; >0	specifies sampling frequency in Hz
Center Frequency	**n** Hz	specifies the center frequency
Bandwidth	**n** Hz, >0,	specifies the bandwidth in Hz
Left Transition Band	**n** Hz, >0	specifies the left transition band in Hz
Right Transition Band	**n** Hz, >0	specifies the right transition band in Hz
Stopband Attenuation	**n** dB, 1..100	specifies stopband attenuation in dB
Maximum Ripple	**n** dB	specifies maximum passband ripple in dB

Outputs		
Output Filter Coefficient File	[path]**filename**[ext]	output filter coefficient file

Comments

The bandwidth field is interpreted as the width of the filter's stopband. Otherwise, there is no difference between bandstop and bandpass. Use a negative value for stopband attenuation.

For FIR bandstop filters, the software automatically adjusts length estimates to be odd values. This is because FIR filters with even symmetry that have a high magnitude value at the Nyquist frequency are required to have an odd length value (which produces the appropriate Nyquist frequency response about n = 0). If you override the length estimate, please continue to use an odd value for bandstop filters.

If no extension is specified for the Input filter design filename, a .ffd extension is assumed. The output filter coefficient filename has a default extension of .fir.

Example

Below is an example of an entry in the FIR Bandstop Filter Design block:

Input Design File	firhp
Design Method	KW
Sampling Frequency	48000
Center Frequency	12000
Bandwidth	4000
Left Transition Band	500
Right Transition Band	500
Stopband Attenuation	40
Maximum Ripple	1
Output	

See Also

FIR Bandpass Filter Design

FIR Highpass Filter Design

FIR Lowpass Filter Design

IIR Bandpass Filter Design

IIR Bandstop Filter Design

IIR Highpass Filter Design

IIR Lowpass Filter Design

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.1.4 Display Settings

section 5.4 Interactive Operation

Registration Information

Template Filename	t_firbs
Label	FIR Bandstop Filter Design
Data Type	DSP
Block Type	FILT
Attributes	DISP | FIR
Defines	
Symbol Filename	bandstop
Help Filename	refguide
Graphical Control Interface Filename	i_filtfb, i_filt
Code Files	c_bfilt, c_afilt
Function Files	f_filter, f_fft

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

FIR Highpass Filter Design

This block allows construction of FIR Highpass filters using the Kaiser Window and Parks-McClellan design methods. See FIR Bandpass Filter Design for more information about filter design capabilities of the software.

Inputs	Entry	Description
Input Design File	[path]**filename**[ext]	filter design goal file
Parameters		
Design Method	**KW/PM**	specifies the design method to be used. KW = Kaiser Window, PM = Parks-McClellan
Sampling Frequency	**n** Hz; >0	specifies sampling

		frequency in Hz
Bandwidth	**n** Hz, >0,	specifies bandwidth in Hz
Transition Band	**n** Hz, >0	specifies transition band in Hz
Stopband Attenuation	**n** dB, 1..100	specifies stopband attenuation in dB
Maximum Ripple	**n** dB	specifies maximum passband ripple in dB

Outputs		
Output Filter Coefficient File	[path]**filename**[ext]	output filter coefficient file

Comments

For FIR highpass filters, the software automatically adjusts length estimates to be odd values. This is because FIR filters with even symmetry that have a high magnitude value at the Nyquist frequency are required to have an odd length value (which produces the appropriate Nyquist frequency response about n = 0). If you override the length estimate, please continue to use an odd value for highpass filters

If no extension is specified for the Input filter design filename, a .ffd extension is assumed. The output filter coefficient filename has a default extension of .fir.

Example

Below is an example of an entry in the FIR Highpass Filter Design block:

Input Design File	firhp
Design Method	KW
Sampling Frequency	48000
Bandwidth	4000
Transition Band	500
Stopband Attenuation	40
Maximum Ripple	1
Output	

See Also

FIR Bandpass Filter Design

FIR Bandstop Filter Design

FIR Lowpass Filter Design

IIR Bandpass Filter Design

IIR Bandstop Filter Design

IIR Highpass Filter Design

IIR Lowpass Filter Design

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.1.4 Display Settings

section 5.4 Interactive Operation

Registration Information

Template Filename	t_firhp
Label	FIR Highpass Filter Design
Data Type	DSP
Block Type	FILT
Attributes	DISP | FIR
Defines	
Symbol Filename	highpass
Help Filename	refguide
Graphical Control Interface Filename	i_filthb, i_filt
Code Files	c_bfilt, c_afilt
Function Files	f_filter, f_fft

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

FIR Lowpass Filter Design

This block allows construction of FIR Lowpass filters using the Kaiser Window and Parks-McClellan design methods. See FIR Bandpass Filter Design for more information about filter design capabilities of the software.

Inputs	Entry	Description
Input Design File	[path]**filename**[ext]	filter design goal file
Parameters		
Design Method	**KW/PM**	specifies the design method to be used. KW = Kaiser Window, PM = Parks-McClellan

Sampling Frequency	**n** Hz; >0	specifies sampling frequency in Hz
Bandwidth	**n** Hz, >0,	specifies bandwidth in Hz
Transition Band	**n** Hz, >0	specifies transition band in Hz
Stopband Attenuation	**n** dB, 1..100	specifies stopband attenuation in dB
Maximum Ripple	**n** dB	specifies maximum required passband ripple in dB

Outputs		
Output Filter Coefficient File	[path]**filename**[ext]	output filter coefficient file

Comments

For FIR highpass filters, the software automatically adjusts length estimates to be odd values. This is because FIR filters with even symmetry that have a high magnitude value at the Nyquist frequency are required to have an odd length value (which produces the appropriate Nyquist frequency response about n = 0). If you override the length estimate, please continue to use an odd value for highpass filters

If no extension is specified for the Input filter design filename, a .ffd extension is assumed. The output filter coefficient filename has a default extension of .fir.

Filter designs are always displayed graphically prior to actual construction. Several measurement functions are available, which apply to both classical and arbitrary designs.

Example

Below is an example of an entry in the FIR Lowpass Filter Design block:

Input Design File	firlp
Design Method	KW
Sampling Frequency	48000
Bandwidth	4000
Transition Band	500
Stopband Attenuation	40
Maximum Ripple	1
Output	

See Also

FIR Bandpass Filter Design

FIR Bandstop Filter Design

FIR Highpass Filter Design

IIR Bandpass Filter Design

IIR Bandstop Filter Design

IIR Highpass Filter Design

IIR Lowpass Filter Design

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.1.4 Display Settings

section 5.4 Interactive Operation

Registration Information

Template Filename	t_firlp
Label	FIR Lowpass Filter Design
Data Type	DSP
Block Type	FILT
Attributes	DISP | FIR
Defines	
Symbol Filename	lowpass
Help Filename	refguide
Graphical Control Interface Filename	i_filthb, i_filt
Code Files	c_bfilt, c_afilt
Function Files	f_filter, f_fft

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

IIR Bandpass Filter Design

This block allows construction of IIR Bandpass filters using the Butterworth, Chebyshev I and II, Bessel and Elliptic design methods.

Also, arbitrary designs, such as multiband and irregular or log frequency passbands, can be specified and realized using the Steiglitz

method. Selectable filter name, sampling frequency, center frequency, bandwidth, transition bandwidths, stopband attenuation, and passband ripple or corner attenuation. In the case of Steiglitz design, the filter order and required minimum convergence error are also selectable. All designs are first displayed and can be measured in a graphical filter display prior to design; arbitrary designs can be further edited directly using the mouse. Resulting frequency responses can be compared in the graphical display to original specifications and "tolerance regions". Current maximum filter orders are 20 for Bessel designs, 40 for Butterworth, Chebyshev I and II, elliptic and Steiglitz designs.

The software creates a time-domain impulse response waveform as output. Also, the software creates both an ASCII "filter coefficient file", which contains a numerator (pole) section and a denominator (zero) section, and an ASCII "design goal file", which contains the filter specifications and the arbitrary frequency response, if any.

Inputs	Entry	Description
Input Design File	[path]**filename**[ext]	filter design goal file
Parameters		
Design Method	**B/C1/C2/Bes/E**	specifies the design method to be used. B = Butterworth, C1 = Chebyshev I, C2 = Chebyshev II, Bes = Bessel, E = Elliptic
Sampling Frequency	**n** Hz; >0	specifies sampling frequency in Hz
Center Frequency	**n** Hz, >0	Specifies the center frequency
Bandwidth	**n** Hz, >0	specifies the bandwidth required in Hz
Left Transition Band	**n** Hz, >0	specifies the left transition band in Hz
Right Transition Band	**n** Hz, >0	specifies the right transition band in Hz
Stopband Attenuation	**n** dB, 1..100	specifies stopband attenuation in dB
Maximum Ripple	**n** dB	specifies maximum passband ripple in dB
Outputs		
Output Filter Coefficient File	[path]**filename**[ext]	output filter coefficient file

Comments

The minimum of the transition bandwidth fields is used to determine the filter order or length. Since classical designs always produce

symmetrical filters, the minimum transition bandwidth will control both transition bandwidths. Arbitrary designs can be used to achieve asymmetrical transition bandwidths.

If no extension is specified for the Input filter design filename, a .ifd extension is assumed. The output filter coefficient filename has a default extension of .iir.

Example

Below is an example of an entry in the IIR Bandpass Filter Design block:

Input Design File	elliptic
Design Method	E
Sampling Frequency	48000
Center Frequency	12000
Bandwidth	4000
Left Transition band	500
Right Transition Band	500
Stopband Attenuation	40
Maximum Ripple	1
Output	

See Also

FIR Bandpass Filter Design

FIR Bandstop Filter Design

FIR Highpass Filter Design

FIR Lowpass Filter Design

IIR Bandstop Filter Design

IIR Highpass Filter Design

IIR Lowpass Filter Design

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.1.4 Display Settings

section 5.4 Interactive Operation

Registration Information

Template Filename	t_iirbp

Label	IIR Bandpass Filter Design
Data Type	DSP
Block Type	FILT
Attributes	DISP | IIR
Defines	
Symbol Filename	bandpass
Help Filename	refguide
Graphical Control Interface Filename	i_filtfb, i_filt
Code Files	c_bfilt, c_afilt
Function Files	f_filter, f_ftt

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters.

IIR Bandstop Filter Design

This block allows construction of IIR Bandstop filters using the Butterworth, Chebyshev I and II, Bessel and Elliptic design methods. See IIR Bandpass Filter Design for more information about filter design capabilities of the software.

Inputs	Entry	Description
Input Design File	[path]**filename**[ext]	filter design goal file
Parameters		
Design Method	**B/C1/C2/Bes/E**	specifies the design method to be used. B = Butterworth, C1 = Chebyshev I, C2 = Chebyshev II, Bes = Bessel, E = Elliptic
Sampling Frequency	**n** Hz; >0	specifies sampling frequency in Hz
Center Frequency	**n** Hz, >0	Specifies the center frequency
Bandwidth	**n** Hz, >0	specifies the bandwidth required in Hz
Left Transition Band	**n** Hz, >0	specifies the left transition band in Hz
Right Transition Band	**n** Hz, >0	specifies the right transition band in Hz
Stopband Attenuation	**n** dB, 1..100	specifies stopband attenuation in dB
Maximum Ripple	**n** dB	specifies maximum passband ripple in dB
Outputs		

Output Filter Coefficient File	[path]**filename**[ext]	output filter coefficient file

Comments

The minimum of the transition bandwidth fields is used to determine the filter order or length. Since classical designs always produce symmetrical filters, the minimum transition bandwidth will control both transition bandwidths. Arbitrary designs can be used to achieve asymmetrical transition bandwidths.

If no extension is specified for the Input filter design filename, a .ifd extension is assumed. The output filter coefficient filename has a default extension of .iir.

Example

Below is an example of an entry in the IIR Bandstop Filter Design block:

Input Design File	iirbstop
Design Method	C2
Sampling Frequency	48000
Center Frequency	12000
Bandwidth	4000
Left Transition band	500
Right Transition Band	500
Stopband Attenuation	40
Maximum Ripple	1
Output	

See Also

FIR Bandpass Filter Design

FIR Bandstop Filter Design

FIR Highpass Filter Design

FIR Lowpass Filter Design

IIR Bandpass Filter Design

IIR Highpass Filter Design

IIR Lowpass Filter Design

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.1.4 Display Settings

section 5.4 Interactive Operation

Registration Information

Template Filename	t_iirbs
Label	IIR Bandstop Filter Design
Data Type	DSP
Block Type	FILT
Attributes	DISP | IIR
Symbol Filename	bandstop
Help Filename	refguide
Graphical Control Interface Filename	i_filtfb, i_filt
Code Files	c_bfilt, c_afilt
Function Files	f_filter, f_fft

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

IIR Highpass Filter Design

This block allows construction of IIR Highpass filters using the Butterworth, Chebyshev I and II, Bessel and Elliptic design methods. See IIR Bandpass Filter Design for more information about filter design capabilities of the software.

Inputs	Entry	Description
Input Design File	[path]**filename**[ext]	filter design goal file
Parameters		
Design Method	**B/C1/C2/Bes/E**	specifies the design method to be used. B = Butterworth, C1 = Chebyshev I, C2 = Chebyshev II, Bes = Bessel, E = Elliptic
Sampling Frequency	**n** Hz; >0	specifies sampling frequency in Hz
Bandwidth	**n** Hz, >0	specifies the bandwidth required in Hz
Transition Band	**n** Hz, >0	specifies the left transition band in Hz
Stopband Attenuation	**n** dB, 1..100	specifies stopband attenuation in dB
Maximum Ripple	**n** dB	specifies maximum passband ripple in dB

Outputs		
Output Filter Coefficient File	[path]**filename**[ext]	output filter coefficient file

Comments

The minimum of the transition bandwidth fields is used to determine the filter order or length. Since classical designs always produce symmetrical filters, the minimum transition bandwidth will control both transition bandwidths. Arbitrary designs can be used to achieve asymmetrical transition bandwidths.

If no extension is specified for the Input filter design filename, a .ifd extension is assumed. The output filter coefficient filename has a default extension of .iir.

Example

Below is an example of an entry in the IIR Highpass Filter Design block:

Input Design File	iirhp
Design Method	C1
Sampling Frequency	48000
Bandwidth	4000
Transition band	500
Stopband Attenuation	40
Maximum Ripple	1
Output	

See Also

FIR Bandpass Filter Design

FIR Bandstop Filter Design

FIR Highpass Filter Design

FIR Lowpass Filter Design

IIR Bandpass Filter Design

IIR Bandstop Filter Design

IIR Lowpass Filter Design

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.1.4 Display Settings

section 5.4 Interactive Operation

Registration Information

Template Filename	t_iirhp
Label	IIR Highpass Filter Design
Data Type	DSP
Block Type	FILT
Attributes	DISP | IIR
Defines	
Symbol Filename	highpass
Help Filename	refguide
Graphical Control Interface Filename	i_filthb, i_filt
Code Files	c_bfilt, c_afilt
Function Files	f_filter, f_fft

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

IIR Lowpass Filter Design

This block allows construction of IIR Lowpass filters using the Butterworth, Chebyshev I and II, Bessel and Elliptic design methods. See IIR Bandpass Filter Design for more information about filter design capabilities of the software.

Inputs	Entry	Description
Input Design File	[path]**filename**[ext]	filter design goal file
Parameters		
Design Method	**B/C1/C2/Bes/E**	specifies the design method to be used. B = Butterworth, C1 = Chebyshev I, C2 = Chebyshev II, Bes = Bessel, E = Elliptic
Sampling Frequency	**n** Hz; >0	specifies sampling frequency in Hz
Bandwidth	**n** Hz, >0	specifies the bandwidth required in Hz
Transition Band	**n** Hz, >0	specifies the left transition band in Hz
Stopband Attenuation	**n** dB, 1..100	specifies stopband attenuation in dB
Maximum Ripple	**n** dB	specifies maximum

		passband ripple in dB
Outputs		
Output Filter Coefficient File	[path]**filename**[ext]	output filter coefficient file

Comments

The minimum of the transition bandwidth fields is used to determine the filter order or length. Since classical designs always produce symmetrical filters, the minimum transition bandwidth will control both transition bandwidths. Arbitrary designs can be used to achieve asymmetrical transition bandwidths.

If no extension is specified for the Input filter design filename, a .ifd extension is assumed. The output filter coefficient filename has a default extension of .iir.

Example

Below is an example of an entry in the IIR Lowpass Filter Design block:

Input Design File	iirhp
Design Method	C1
Sampling Frequency	48000
Bandwidth	4000
Transition band	500
Stopband Attenuation	40
Maximum Ripple	1
Output	

See Also

FIR Bandpass Filter Design

FIR Bandstop Filter Design

FIR Highpass Filter Design

FIR Lowpass Filter Design

IIR Bandpass Filter Design

IIR Bandstop Filter Design

IIR Lowpass Filter Design

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.1.4 Display Settings

section 5.4 Interactive Operation

Registration Information

Template Filename	t_iirlp
Label	IIR Lowpass Filter Design
Data Type	DSP
Block Type	FILT
Attributes	DISP | IIR
Defines	
Symbol Filename	lowpass
Help Filename	refguide
Graphical Control Interface Filename	i_filthb, i_filt
Code Files	c_bfilt, c_afilt
Function Files	f_filter, f_fft

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

1.5 Function Blocks

1.5.1 Signal Processing Blocks

Signal Processing Functions available in the DSPower system library are listed below. For a complete listing of blocks in alphabetical order, see Block Alphabetic Listing and Cross-Reference, above.

Signal Processing Blocks

Circular Correlation

Description Text.

Inputs	Entry	Description

Input 1	[path]**filename**[ext]	waveform to display on trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2
Parameters		

Comments

Comments go here.

Example

Below is an example of an entry in the Circular Correlation block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_crcorr
Label	Circular Correlation
Data Types	DSP

Block Types	FUNC | SP
Attributes	0
Defines	
Symbol Filename	conv
Help Filename	refguide
Graphical Control Interface Filenames	
Code Files	c_bfunc, c_afunc
Function Files	f_conv

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Convolution

Convolution has selectable input waveform, filter waveform, and output waveform. Filter waveforms can be output of standard block functions such as FIR and IIR Filter Construction and Spectrum Analyzer transfer function storage, or any arbitrary time domain waveform. Performed by the host or by the currently selected DSP hardware when enabled as a "DSP Accelerator."

Inputs	**Entry**	**Description**
Input File	[path]**filename**[ext]	input file
Filter File	[path]**filename**[ext]	filter file
Outputs		
Output File	[path]**filename**[ext]	output file

Comments

This function uses an external program for filter sizes greater than 16384 point. Again, this could vary depending on the DSP Engine being used. Input waveform size is not limited.

If no extension is specified for the files, a .tim extension is assumed.

Example

Below is an example of an entry in the Convolution block:

Input File	speech
Filter File	kaiser
Output File	sp_out

See Also

Filter Blocks

Deconvolution

Correlation

Circular Correlation

Wavelet Transform

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.1.4 Display Settings

section 5.4 Interactive Operation

Registration Information

Template Filename	t_conv
Label	Convolution
Data Type	DSP
Block Type	FUNC | SP | FILT
Attributes	GENEXT
Defines	
Symbol Filename	conv
Help Filename	refguide
Graphical Control Interface Filename	
Code Files	c_bfunc, c_afunc
Function Files	f_conv

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Correlation

[@k Circular Correlation, Cross Correlation, correlation,, circular]

Similar to Convolution, Correlation and Circular Correlation also have selectable input waveforms, filter waveforms, and output waveforms. Filter waveforms can be output of standard block functions such as FIR and IIR Filter Construction and Spectrum Analyzer transfer

function storage, or any arbitrary time domain waveform. Performed by the host or by the currently selected DSP hardware when enabled as a "DSP Accelerator."

Inputs	Entry	Description
Input File	[path]**filename**[ext]	input file
Filter File	[path]**filename**[ext]	filter file
Outputs		
Output File	[path]**filename**[ext]	output file

Comments

These functions use an external program for filter sizes greater than 16384 point. Again, this could vary depending on the DSP Engine being used. Input waveform size is not limited.

If no extension is specified for the files, a .tim extension is assumed.

Example

Below is an example of an entry in the Correlation/Circular Correlation block:

Input File	speech
Filter File	kaiser
Output File	sp_out

See Also

Filter Blocks

Deconvolution

Convolution

Circular Correlation

Wavelet Transform

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.1.4 Display Settings

section 5.4 Interactive Operation

Registration Information

Template Filename	t_corr

Label	Correlation
Data Type	DSP
Block Type	FUNC | SP
Attributes	GENEXT
Defines	
Symbol Filename	conv
Help Filename	refguide
Graphical Control Interface Filename	
Code Files	c_bfunc, c_afunc
Function Files	f_conv

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Deconvolution

Description Text.

Inputs	Entry	Description
Input 1	[path]filename[ext]	waveform to display on trace 1
Input 2	[path]filename[ext]	waveform to display on trace 2
Outputs		
Output 1	[path]filename[ext]	waveform output from trace 1
Output 2	[path]filename[ext]	waveform output from trace 2
Parameters		

Comments

Comments go here.

Example

Below is an example of an entry in the Deconvolution block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Parameter 1	Log

Parameter 2 0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_xfer
Label	Deconvolution
Data Types	DSP
Block Types	FUNC | SP
Attributes	0
Defines	
Symbol Filename	dconv
Help Filename	refguide
Graphical Control Interface Filenames	
Code Files	c_bfunc, c_afunc
Function Files	f_xfer

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Delay

Description Text.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		

Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2

Parameters

Comments

Comments go here.

Example

Below is an example of an entry in the Delay block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_delay
Label	Delay
Data Types	DSP
Block Types	FUNC | SP
Attributes	0
Defines	
Symbol Filename	delay
Help Filename	refguide

Graphical Control Interface Filenames	
Code Files	c_bfunc, c_afunc
Function Files	f_delay

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Difference Equations

See Difference Equations in section 1.5.2, Math Blocks.

FFT Generation

FFT allows selectable input waveform and choosing the Ex option allows external parameters like framesize, frame overlap, Window type etc. to be specified.

Depending on the DSP Engine used, an external program is used for FFT sizes > 4096 points.

Framesize entry can be used to cause segmentation of the input waveform. When framesize is less than FFT size, remaining FFT input points are zero-filled. A ‘0’ entry causes framesize to be determined automatically from the input waveform file header.

FFT size should be entered as a value equal to 2 raised to an integer power, ranging from 4 to 262,144. Non-power-of-two values are quantized to the nearest allowable value. A ‘0’ entry causes FFT size to be determined automatically by the framesize entry (first power of two value greater or equal to the framesize). Larger FFT sizes may not run, or not run efficiently, depending on the amount of extended memory in the host machine.

Currently, this block does not allow overlap specification or window selection for FFT sizes > 4096. If using the EX option, this function does not make use of DSP accelerator hardware.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		

Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2

Parameters

Comments

Comments go here.

Example

Below is an example of an entry in the FFT Generation block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_fft
Label	FFT Generation
Data Types	DSP
Block Types	FUNC | SP
Attributes	GENEXT
Defines	
Symbol Filename	fft
Help Filename	refguide

Graphical Control Interface Filenames	
Code Files	c_bfunc, c_afunc
Function Files	f_fft

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Filter Asm Code Generation

Description Text

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2
Parameters		

Comments

Comments go here.

Example

Below is an example of an entry in the Filter Asm Code Generation block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_asmgen
Label	Filter Asm Code Generation
Data Types	DSP
Block Types	FILT
Attributes	EXEC | DISP | FIR | IIR
Defines	
Symbol Filename	asmgen
Help Filename	refguide
Graphical Control Interface Filenames	
Code Files	c_bfunc, c_afunc
Function Files	f_asmgen

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Frequency Zoom

This block takes the input waveform, multiplies by complex exponential to shift zoom area to baseband (origin), then performs sampling rate conversion to remove unwanted bandwidth and obtain correct new sampling rate, and finally performs manipulation in complex frequency domain and iFFT to create real-valued time domain waveform as output.

Inputs	Entry	Description
Input File	[path]**filename**[ext]	input file
Parameters		
Normalized Start Frequency	**n**	specifies Normalized Start Frequency
Normalized Stop Frequency	**n**	specifies Normalized Stop

		Frequency
Outputs		
Output File	[path]**filename**[ext]	output file

Comments

The start and stop frequencies should be entered so that, when multiplied by half the sampling rate, more or less an integer results.

If no extension is specified for the files, a .tim extension is assumed.

Example

Below is an example of an entry in the Frequency Zoom block:

Input File	signal
Normalized Start Frequency	0.25
Normalized Stop Frequency	0.75
Output File	s_out

See Also

Sampling Rate Conversion

Fs Decimation (Divide)

Fs Interpolation (Multiply)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.1.4 Display Settings

section 5.4 Interactive Operation

Registration Information

Template Filename	t_fzoom
Label	Frequency Zoom
Data Type	DSP
Block Type	FUNC | SP
Attributes	0
Defines	
Symbol Filename	interp
Help Filename	refguide
Graphical Control Interface Filename	
Code Files	c_bfunc, c_afunc

Function Files	f_fzoom

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Fs Decimation (Divide)

This block can be used if the sampling rate of the input needs to be reduced. The divide factor is one of the parameters for this block.

Inputs	Entry	Description
Input File	[path]**filename**[ext]	input file
Parameters		
Decimation Integer	**n**	specifies the divide factor
Outputs		
Output File	[path]**filename**[ext]	output file

Comments

If no extension is specified for the files, a .tim extension is assumed.

Example

Below is an example of an entry in the Decimation block:

Input File	speech
Normalized Start Frequency	7
Normalized Stop Frequency	2
Output File	sp_out

See Also

Frequency Zoom

Fs Decimation (Divide)

Fs Interpolation (Multiply)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.1.4 Display Settings

section 5.4 Interactive Operation

Registration Information

Template Filename	t_deci
Label	Fs Decimation
Data Type	DSP
Block Type	FUNC | SP
Attributes	0
Defines	
Symbol Filename	deci
Help Filename	refguide
Graphical Control Interface Filename	
Code Files	c_bfunc, c_afunc
Function Files	f_fsconv

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Fs Interpolation (Mult)

[@k sampling frequency interpolation, sampling interpolation, interpolation,, sampling]

This block can be used if the sampling rate of the input needs to be increased. The multiply factor is one of the parameters for this block.

Inputs	**Entry**	**Description**
Input File	[path]**filename**[ext]	input file
Parameters		
Interpolation Integer	**n**	specifies the multiply factor
Outputs		
Output File	[path]**filename**[ext]	output file

Comments

If no extension is specified for the files, a .tim extension is assumed.

Example

Below is an example of an entry in the Interpolation block:

Input File	speech
Interpolation factor	7
Output File	sp_out

See Also

Frequency Zoom

Fs Decimation (Divide)

Fs Interpolation (Multiply)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.1.4 Display Settings

section 5.4 Interactive Operation

Registration Information

Template Filename	t_interp
Label	Fs Interpolation (Mult)
Data Type	DSP
Block Type	FUNC | SP
Attributes	0
Defines	
Symbol Filename	interp
Help Filename	refguide
Graphical Control Interface Filename	
Code Files	c_bfunc, c_afunc
Function Files	f_fsconv

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

iFFT

Using real and imaginary data files as input, frequency waveform files undergo a fast inverse Fourier transform to create an output time domain waveform.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace

		1
Output 2	[path]**filename**[ext]	waveform output from trace 2

Parameters

Comments

Comments go here.

Example

Below is an example of an entry in the iFFT block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_ifft
Label	iFFT
Data Types	DSP
Block Types	FUNC | SP
Attributes	0
Defines	
Symbol Filename	ifft
Help Filename	refguide
Graphical Control Interface Filenames	

Code Files	c_bfunc, c_afunc
Function Files	f_ifft

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

LPC Autocorrelation

Description Text

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2
Parameters		

Comments

Comments go here.

Example

Below is an example of an entry in the LPC Autocorrelation block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_lpc
Label	LPC Autocorrelation
Data Types	DSP
Block Types	FUNC | SP
Attributes	GENEXT
Defines	
Symbol Filename	lpc
Help Filename	refguide
Graphical Control Interface Filenames	
Code Files	c_bfunc, c_afunc
Function Files	f_lpc

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Power Spectra Estimation

[@k power spectra estimation, estimation,, power spectra]

Power spectra waveform files are calculated essentially from one or more input magnitude frames averaged together or filtered producing one or more output frames. Output is always "root-mean-square"; To see power spectra generation results, use any of the Power spectra display or use the Spectrum Analyzer and enable the power-spec field;

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1

Output 2	[path]**filename**[ext]	waveform output from trace 2

Parameters

Comments

Comments go here.

Example

Below is an example of an entry in the Power Spectra Estimation block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_pwrgen
Label	Power Spectra Estimation
Data Types	DSP
Block Types	FUNC | SP
Attributes	0
Defines	
Symbol Filename	pwrspec
Help Filename	refguide

Graphical Control Interface Filenames	
Code Files	c_bfunc, c_afunc
Function Files	f_pwrgen

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Running Sum (Boxcar Filter)

Description Text.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2
Parameters		

Comments

Comments go here.

Example

Below is an example of an entry in the Running Sum block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_runsum
Label	Running Sum (Boxcar Filter)
Data Types	DSP
Block Types	FUNC | SP | FILT
Attributes	0
Defines	
Symbol Filename	runsum
Help Filename	refguide
Graphical Control Interface Filenames	
Code Files	c_bfunc, c_afunc
Function Files	f_diffeq

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Recursive Filtering

Applies IIR filters in input data. Selectable input waveform, filter coefficient file, and output waveform. The input "IIR Filter Coefficient" files are in ASCII format and can be standard output from the Hypersignal Filter functions, or user-defined. The coefficient file format accepts both factored and direct-form numerator (poles) and denominator (zeros), and can be applied in "biquad cascade" (factored) form or direct form.

Inputs	Entry	Description
Input File	[path]**filename**[ext]	input file
Parameters		
Interpolation Integer	**n**	specifies the multiply factor
Decimation Integer	**n**	specifies the divide factor
Outputs		

Output File	[path]**filename**[ext]	output file

Comments

If no extension is specified for the files, a .tim extension is assumed.

Example

Below is an example of an entry in the Recurvise Filtering block:

Input File	speech
Normalized Start Frequency	7
Normalized Stop Frequency	2
Output File	sp_out

See Also

Frequency Zoom

Fs Decimation (Divide)

Fs Interpolation (Multiply)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.1.4 Display Settings

section 5.4 Interactive Operation

Registration Information

Template Filename	t_recur
Label	Recursive Filtering
Data Type	DSP
Block Type	FUNC | SP | FILT
Attributes	GENEXT | IIR
Defines	
Symbol Filename	recur
Help Filename	refguide
Graphical Control Interface Filename	
Code Files	c_bfunc, c_afunc
Function Files	f_recur

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Sampling Rate Conversion

[@k sampling rate conversion, conversion,, sampling]

This block can be used either to reduce or increase the sampling rate of a given waveform. It takes in both multiply and divide integers as parameters. It initially multiplies the waveform with the multiple integer and then divides with the divide factor.

Inputs	Entry	Description
Input File	[path]**filename**[ext]	input file
Parameters		
Interpolation Integer	**n**	specifies the multiply factor
Decimation Integer	**n**	specifies the divide factor
Outputs		
Output File	[path]**filename**[ext]	output file

Comments

If no extension is specified for the files, a .tim extension is assumed.

Example

Below is an example of an entry in the Sampling Rate Conversion block:

Input File	speech
Normalized Start Frequency	7
Normalized Stop Frequency	2
Output File	sp_out

See Also

Frequency Zoom

Fs Decimation (Divide)

Fs Interpolation (Multiply)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.1.4 Display Settings

section 5.4 Interactive Operation

Registration Information

Template Filename	t_
Label	
Data Type	DSP
Block Type	
Attributes	
Defines	
Symbol Filename	
Help Filename	refguide
Graphical Control Interface Filename	
Code Files	
Function Files	f_

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Wavelet Transform, Continuous

[@k continuous wavelet transform]

The Wavelet block accepts the following input parameters: Input filename, Wavelet (file or AUTO mode), Output filename and number of constant scale values.

Choosing the wavelet:

wlt.mac accepts the following as input parameters to the wavelet field:

- A complex wavelet file;
- A real wavelet file (complex wavelet is created automatically)
- "autosegment" option, if wavelet is to be derived from signal itself, can be entered as 'offset,length', in samples. For example, an entry of '75,32' in this field would cause the program to use a 32 point wavelet, derived from samples 75 through 106 of the input waveform.

Notes

1) When using the autosegment option, it is recommended to choose a periodic portion of the input signal.

Inputs	Entry	Description
Input File	[path]**filename**[ext]	input file
Wavelet	[path]**filename**[ext], **n1, n2**	wavelet filename, Use n1=

		starting point, n2 = ending point to create wavelet from input.
Parameters		
Number of Scale Values	**n** points	Number of constant scale values
Outputs		
Output File	[path]**filename**[ext]	output file

Comments

The example wavelet provided with this block is a Gaussian wavelet derived from samples 75 through 106 of the 3-component signal also provided with this macro; Note that the last component has a center frequency of pi/3 radians (6 samples per period)

This block produces frequency domain output compatible with the displays of the DSP Engine being used. Currently, this function does not allow the input waveform to be segmented. So as a result, this function does not allow large input waveforms.

If no extension is specified for the files, a .tim extension is assumed.

Example

Below is an example of an entry in the Wavelet Transform block:

Input File	sig
Wavelet	wave
Number of scale values	128
Output File	sig_out

See Also

Filter Blocks

Convolution

Deconvolution

Correlation

Circular Correlation

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.1.4 Display Settings

Registration Information

Template Filename	t_wlt
Label	Wavelet Transform, Continuous
Data Type	DSP
Block Type	FUNC | SP
Attributes	0
Defines	
Symbol Filename	wlt
Help Filename	refguide
Graphical Control Interface Filename	
Code Files	c_bfunc, c_afunc
Function Files	f_wlt

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

1.5.2 Math Blocks

Math functions available in the DSPower system library are listed below. For a complete listing of blocks in alphabetical order, see Block Alphabetic Listing and Cross-Reference, above.

Math Blocks

Add2

Description Text.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace

		1
Output 2	[path]**filename**[ext]	waveform output from trace 2

Parameters

Comments

Comments go here.

Example

Below is an example of an entry in the Add2 block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_add2
Label	Add2
Data Types	DSP
Block Types	FUNC | MATH
Attributes	0
Defines	
Symbol Filename	add2
Help Filename	refguide
Graphical Control Interface Filenames	

Code Files	c_bfunc, c_afunc
Function Files	f_diffeq

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Difference Equations

Generation of new waveforms and manipulation of existing waveforms using various operators and functions can be specified in difference equation form. Input sources include existing waveforms, unit-step and delta functions, and previous output (recursive) data. Operators include signal arithmetic, multiplication, division (and integer division) modulus, differentiation, integration, min and max, and a frequency domain "frame operator." Functions include several trigonometric and transcendental functions, random noise, and various linear and non-linear math functions.

Equations are based on a discrete time index "n", which begins at zero and increments a specified number of times, according to user entry. The difference equation evaluates at each discrete time index. Note that it is also possible to write expressions for n, both when used as an input index, on the left side of the equals sign.

Inputs	**Entry**	**Description**
Input 1	[path]**filename**[ext]	waveform to display on trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2
Parameters		

Comments

Comments go here.

Example

Below is an example of an entry in the Difference Equations block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_diffeq
Label	Difference Equations
Data Types	DSP
Block Types	FUNC | SP | MATH | GEN
Attributes	GENEXT
Defines	
Symbol Filename	diffeq
Help Filename	refguide
Graphical Control Interface Filenames	i_diffeq
Code Files	c_bfunc, c_afunc
Function Files	f_diffeq

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Mix (Heterodyne)

Description Text.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2
Parameters		

Comments

Comments go here.

Example

Below is an example of an entry in the Mix block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_mix
Label	Mix (Heterodyne)

Data Types	DSP
Block Types	FUNC | MATH
Attributes	0
Defines	
Symbol Filename	mult2
Help Filename	refguide
Graphical Control Interface Filenames	
Code Files	c_bfunc, c_afunc
Function Files	f_diffeq

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Mult2

Description Text.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2
Parameters		

Comments

Comments go here.

Example

Below is an example of an entry in the Mult2 block:

Input 1	speech
Input 2	
Output 1	

Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_mult2
Label	Mult2
Data Types	DSP
Block Types	FUNC | MATH
Attributes	0
Defines	
Symbol Filename	mult2
Help Filename	refguide
Graphical Control Interface Filenames	
Code Files	c_bfunc, c_afunc
Function Files	f_diffeq

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Scale Factor

Description Text.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2

Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2
Parameters		

Comments

Comments go here.

Example

Below is an example of an entry in the Scale Factor block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_scale
Label	Scale Factor
Data Types	DSP
Block Types	FUNC | MATH
Attributes	0
Defines	

Symbol Filename	scale
Help Filename	refguide
Graphical Control Interface Filenames	
Code Files	c_bfunc, c_afunc
Function Files	f_diffeq

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Sub2

Description Text.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2
Parameters		

Comments

Comments go here.

Example

Below is an example of an entry in the Sub2 block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_sub2
Label	Sub2
Data Types	DSP
Block Types	FUNC | MATH
Attributes	0
Defines	
Symbol Filename	sub2
Help Filename	refguide
Graphical Control Interface Filenames	
Code Files	c_bfunc, c_afunc
Function Files	f_diffeq

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

1.5.3 Signal Generation and Source Blocks

Signal Generation functions available in the DSPower system library are listed below. For a complete listing of blocks in alphabetical order, see Block Alphabetic Listing and Cross-Reference, above.

Signal Generation/Source Blocks

Cosine Generator

Description Text.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2
Parameters		

Comments

Comments go here.

Example

Below is an example of an entry in the Cosine Generation block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_cosgen

Label	Cosine Generator
Data Types	DSP
Block Types	FUNC | GEN
Attributes	0
Defines	
Symbol Filename	cosgen
Help Filename	refguide
Graphical Control Interface Filenames	
Code Files	c_bfunc, c_afunc
Function Files	f_diffeq

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Difference Equations

See Difference Equations in section 1.5.2, Math Blocks.

Sawtooth Generator

Description Text.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2
Parameters		

Comments

Comments go here.

Example

Below is an example of an entry in the Sawtooth Generator block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_trigen
Label	Sawtooth Generator
Data Types	DSP
Block Types	FUNC | GEN
Attributes	0
Defines	
Symbol Filename	trigen
Help Filename	refguide
Graphical Control Interface Filenames	
Code Files	c_bfunc, c_afunc
Function Files	f_diffeq

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Sine Generator

Description Text.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2
Parameters		

Comments

Comments go here.

Example

Below is an example of an entry in the Sine Generator block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_singen

Label	Sine Generator
Data Types	DSP
Block Types	FUNC | GEN
Attributes	0
Defines	
Symbol Filename	singen
Help Filename	refguide
Graphical Control Interface Filenames	
Code Files	c_bfunc, c_afunc
Function Files	f_diffeq

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Squarewave Generator

Description Text.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2
Parameters		

Comments

Comments go here.

Example

Below is an example of an entry in the Squarewave Generator block:

Input 1 speech

Input 2

Output 1	
Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_sqrgen
Label	Squarewave Generator
Data Types	DSP
Block Types	FUNC | GEN
Attributes	0
Defines	
Symbol Filename	sqrgen
Help Filename	refguide
Graphical Control Interface Filenames	
Code Files	c_bfunc, c_afunc
Function Files	f_diffeq

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Waveform File Source

Description Text.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1

Input 2	[path]**filename**[ext]	waveform to display on trace 2

Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2

Parameters		

Comments

Comments go here.

Example

Below is an example of an entry in the Waveform File Source block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_wvfsrc
Label	Waveform File Source
Data Types	DSP
Block Types	FUN | GEN
Attributes	0

Defines	
Symbol Filename	wvfsrc
Help Filename	refguide
Graphical Control Interface Filenames	
Code Files	
Function Files	

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

1.6 Instrument Blocks

Instrumentation functions available in the DSPower system library are listed below. For a complete listing of blocks in alphabetical order, see Block Alphabetic Listing and Cross-Reference, above.

Instrument Blocks

2-Chan Transfer Analyzer

Description Text.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2
Parameters		

Comments

Comments go here.

Example

Below is an example of an entry in the 2-Chan Transfer Analyzer block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_xfrana
Label	2-Chan Transfer Analyzer
Data Types	DSP
Block Types	INST
Attributes	DISP
Defines	XFRANA
Symbol Filename	spcana
Help Filename	refguide
Graphical Control Interface Filenames	i_spcana
Code Files	c_ainst
Function Files	f_spcana

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

A/D Input

Description Text.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2
Parameters		

Comments

Comments go here.

Example

Below is an example of an entry in the A/D Input block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_ad
Label	A/D Input
Data Types	DSP
Block Types	INST
Attributes	0
Defines	
Symbol Filename	ADin
Help Filename	refguide
Graphical Control Interface Filenames	i_ad
Code Files	c_ainst
Function Files	f_anlcnv

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Continuous Signal Gen

[@k continuous signal generation, generation,, continuous, signal synthesis, synthesis,, signal]

Signal generation looping in the Analog Conversion menu item has been enhanced to allow easier construction of a continuous function generator. By creating short signal/function waveforms with the Difference Equations function, and then using these waveforms as input to the Analog Conversion function, a continuous signal generator can be achieved when the ACQ/GEN field is set to 'GL'. Some guidelines to follow when specifying a Difference Equation:

- waveform lengths (as specified in the Difference Equations # OF SAMPLES field) should be an integer multiple of the function period; if you are in doubt about the function period, use the Waveform Display/Edit option to measure it exactly
- the overall waveform length should be anywhere from a few hundred samples to less than 6000 samples; only one or just a few periods of the function waveform is not recommended, because of the overhead required by the DSP software when "wrapping around" to repeat the function. And, definitely, long waveforms are not recommended because they become split into buffer segments due to DSP board memory limitations, defeating the continuous mechanism altogether

- the length of the waveform, in samples (and multiplied by the number of channels), should be divisible by two
- watch out for sampling frequency when designing the difference equation; most hardware only allows certain sampling frequencies, and if you base your calculations on a sampling frequency the hardware cannot achieve, then there is likely to be a discontinuity when the output waveform repeats

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2
Parameters		

Comments

Comments go here.

Example

Below is an example of an entry in the Continuous Signal Gen block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_siggen
Label	Continuous Signal Gen
Data Types	DSP
Block Types	INST
Attributes	INST
Defines	
Symbol Filename	siggen
Help Filename	refguide
Graphical Control Interface Filenames	
Code Files	c_ainst
Function Files	f_diffeq, f_anlcnv

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

D/A Output

Description Text.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2
Parameters		

Comments

Comments go here.

Example

Below is an example of an entry in the D/A Output block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_da
Label	D/A Output
Data Types	DSP
Block Types	INST
Attributes	0
Defines	
Symbol Filename	DAout
Help Filename	refguide
Graphical Control Interface Filenames	
Code Files	c_ainst
Function Files	f_anlcnv

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Digital Oscilloscope

See Digital Oscilloscope in section 1.3, Display Blocks.

Digital Tape Recorder

Description Text.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2
Parameters		

Comments

Comments go here.

Example

Below is an example of an entry in the Digital Tape Recorder block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_dtape
Label	Digital Tape Recorder
Data Types	DSP
Block Types	INST
Attributes	INST | EXEC
Defines	
Symbol Filename	dtape
Help Filename	refguide
Graphical Control Interface Filenames	
Code Files	c_ainst
Function Files	f_exec

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Gen Stimulus and Response

[@k general stimulus and reponse, abitrary stimulus and response]

A Single-channel or two-channel stimulus and response measurement function is available that allows simultaneous output of stimuli waveform and continuous recording of analog input disk. Controls include sampling rate, hardware gain (if programmable), triggering (channel and level), software scaling and offsets, amount of data, and positive or negative stimulus delay.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1

Output 2	[path]**filename**[ext]	waveform output from trace 2

Parameters

Comments

Comments go here.

Example

Below is an example of an entry in the Gen Stimulus and Response block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_stim
Label	Gen Stimulus and Response
Data Types	DSP
Block Types	INST
Attributes	DISP | EDIT
Defines	STIMRESP
Symbol Filename	stim
Help Filename	refguide

Graphical Control Interface Filenames	
Code Files	c_ainst
Function Files	f_anlcnv

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

MLS Stimulus and Response

This function is still considered to be in a beta state, with improvements continuing to be added.

This function prompts for stimulus length, number of averages, output waveform filename, sampling frequency, a channel list, and stimulus amplitude and offset. It uses the currently installed hardware specified in the System Configuration menu ANALOG CONVERSION field, performs the stimulus & response operation, synchronously averages the results in the time domain, performs a cross-correlation operation to extract the impulse response, and then an FFT to calculate the frequency response. The macro function concludes by showing the frequency response in the Magnitude Display, with vertical scale set to +/- 50 dB.

When using this function, the stimulus length should be entered in seconds. The actual stimulus length in samples is chosen by taking the entered value, multiplying it by the entered sampling rate, and quantizing the result up to the nearest allowable MLS length. Quantization is due to the nature of the MLS process, which requires stimulus lengths to be a power of 2 minus 1; for example, 4095, 8191, 16383, and 65535. BE AWARE that some DSP hardware can achieve only certain sampling rates, so it is a good idea to know these ahead of time if you are trying to calculate stimulus lengths exactly. See the Hardware Reference Guide for information about memory and sampling rate limitations for individual hardware types.

Currently, mls.mac does not have an option to equalize out the response due solely to the measurement board being used. This option, and other “calibration mode” features, are expected to be added later.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1

Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2
Parameters		

Comments

Comments go here.

Example

Below is an example of an entry in the MLS Stimulus and Response block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_mls
Label	MLS Stimulus and Response
Data Types	DSP
Block Types	INST

Attributes	DISP | MAGDSP | FRQAXIS | FRQZOOM | FRQPAN
Defines	STIMRESP
Symbol Filename	stim
Help Filename	refguide
Graphical Control Interface Filenames	i_file, i_wvfrm, i_xaxis, i_yaxis, i_dspopt, i_dsphlp
Code Files	c_ainst
Function Files	f_diffeq, f_mls, f_fft, f_magdsp

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Octave Band Analyzer

Description Text.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2
Parameters		

Comments

Comments go here.

Example

Below is an example of an entry in the Octave Band Analyzer block:

Input 1	speech
Input 2	
Output 1	
Output 2	

Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_octana
Label	Octave Band Analyzer
Data Types	DSP
Block Types	INST
Attributes	DISP
Defines	OCTANA
Symbol Filename	octana
Help Filename	refguide
Graphical Control Interface Files	i_spcana
Code Files	c_ainst
Function Files	f_spcana

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Spectrum Analyzer

The Spectrum Analyzer can display single-, dual-, or overlaid-trace input from previously stored waveform files or any of the currently active analog channel inputs. Various combinations are possible, including viewing the same analog channel in different domains, formats, or with different filtering options, and overlaying analog inputs with previously stored waveform file input. Selectable display data formats include time, linear/log magnitude, phase, transfer function, and impulse response (iFFT of transfer function). Averaging

can be enabled. Operation from the DSP chip point of view is always in real-time up to the maximum sampling rate, but the rate of update of display frames to the video system of the host computer depends on the speed of the host I/O bus and video system. The maximum sampling rate possible depends on the DSP/Acquisition board and DSP chip in use.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2
Parameters		

Comments

Comments go here.

Example

Below is an example of an entry in the Spectrum Analyzer block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1Creating and Adding Blocks

Registration Information

Template Filename	t_spcana
Label	Spectrum Analyzer
Data Types	DSP
Block Types	INST | DISP
Attributes	DISP
Defines	SPCANA
Symbol Filename	spcana
Help Filename	refguide
Graphical Control Interface Filenames	i_spcana
Code Files	c_ainst
Function Files	f_spcana

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Strip Chart Recorder

Description Text.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2
Parameters		

Comments

Comments go here.

Example

Below is an example of an entry in the Strip Chart Recorder block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_strip
Label	Strip Chart Recorder
Data Types	DSP
Block Types	INST
Attributes	EXEC | INST | DISP
Defines	
Symbol Filename	strip
Help Filename	refguide
Graphical Control Interface Filenames	
Code Files	c_ainst
Function Files	f_exec

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

1.7 Monitor / Debug Blocks

Some general purpose Utility functions available in the DSPower system library are listed below. For a complete listing of blocks in alphabetical order, see Block Alphabetic Listing and Cross-Reference, above.

Monitor/Debug Blocks

.MAT to .TIM Convert

File Export

Description Text.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2
Parameters		

Comments

Comments go here.

Example

Below is an example of an entry in the File Export block:

Input 1 speech

Input 2	
Output 1	
Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_fileex
Label	File Export
Data Types	DSP
Block Types	UTIL
Attributes	0
Defines	
Symbol Filename	fileex
Help Filename	refguide
Graphical Control Interface Filenames	
Code Files	c_butil, c_autil
Function Files	f_fileex

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

File Import

Description Text.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on

		trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2

Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2

Parameters		

Comments

Comments go here.

Example

Below is an example of an entry in the File Import block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_fileim
Label	File Import
Data Types	DSP
Block Types	UTIL

Attributes	0
Defines	
Symbol Filename	fileim
Help Filename	refguide
Graphical Control Interface Filenames	
Code Files	c_butil, c_autil
Funtion Files	f_fileim

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Waveform File Conversion

Description Text.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2
Parameters		

Comments

Comments go here.

Example

Below is an example of an entry in the Waveform File Conversion block:

Input 1	speech
Input 2	
Output 1	
Output 2	

Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_filcnv
Label	Waveform File Conversion
Data Types	DSP
Block Types	UTIL
Attributes	0
Defines	
Symbol Filename	filcnv
Help Filename	refguide
Graphical Control Interface Filenames	
Code Files	c_butil, c_autil
Function Files	f_filcnv

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

1.8 Utility Blocks

Some general purpose Utility functions available in the DSPower system library are listed below. For a complete listing of blocks in alphabetical order, see Block Alphabetic Listing and Cross-Reference, above.

Utility Blocks

.MAT to .TIM Convert

File Export

Description Text.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2
Parameters		

Comments

Comments go here.

Example

Below is an example of an entry in the File Export block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_fileex
Label	File Export
Data Types	DSP
Block Types	UTIL
Attributes	0
Defines	
Symbol Filename	fileex
Help Filename	refguide
Graphical Control Interface Filenames	
Code Files	c_butil, c_autil
Function Files	f_fileex

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

File Import

Description Text.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2
Parameters		

Comments

Comments go here.

Example

Below is an example of an entry in the File Import block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1 Creating and Adding Blocks

section 5.4 Interactive Operation

Registration Information

Template Filename	t_fileim
Label	File Import
Data Types	DSP
Block Types	UTIL
Attributes	0
Defines	
Symbol Filename	fileim
Help Filename	refguide
Graphical Control Interface Filenames	
Code Files	c_butil, c_autil
Funtion Files	f_fileim

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Waveform File Conversion

Description Text.

Inputs	Entry	Description
Input 1	[path]**filename**[ext]	waveform to display on trace 1
Input 2	[path]**filename**[ext]	waveform to display on trace 2
Outputs		
Output 1	[path]**filename**[ext]	waveform output from trace 1
Output 2	[path]**filename**[ext]	waveform output from trace 2
Parameters		

Comments

Comments go here.

Example

Below is an example of an entry in the Waveform File Conversion block:

Input 1	speech
Input 2	
Output 1	
Output 2	
Parameter 1	Log
Parameter 2	0.0

Entry Notes

1) Note Text.

See Also

2-D Spectrograph (Contour)

Related Users Guide Topics

section 5.3.1Creating and Adding Blocks

Registration Information

Template Filename	t_filcnv
Label	Waveform File Conversion
Data Types	DSP
Block Types	UTIL
Attributes	0
Defines	
Symbol Filename	filcnv
Help Filename	refguide
Graphical Control Interface Filenames	
Code Files	c_butil, c_autil
Function Files	f_filcnv

For more information on Registration Information, see Signalogic DSP Software Users Guide section , Registration Parameters

Notes: